

**REMARKS/DISCUSSION OF ISSUES**

Summary

Claims 1-6 are pending in the application. Claims 1-6 are finally rejected.

Rejections over Scott

Claims 1-6 are finally rejected under 35 U.S.C. 102(a) or 102(e) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Scott et al. U.S. patent 6,639,362 (herein 'Scott').

In response to Applicant's prior argument that Applicant limits the amount of MgO to 1000 ppm, above which spinels undesirably form at the surface and in the bulk of the body, whereas Scott calls for up to 1500 ppm of MgO, the Examiner has responded that Scott's broader range encompasses Applicant's claimed range, making Applicant's claimed range at least obvious if not anticipated.

While a showing of overlapping ranges can establish a *prima facie* case of obviousness, Applicant can rebut such a *prima facie* case by showing the criticality of the claimed range. See, e.g., MPEP 2144.05 and *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Applicant's upper limit of 1000 ppm is clearly critical, since as taught, e.g., at page 2, lines 28-30 of Applicant's specification, above this limit, undesirable spinel formation occurs. Spinel reacts with the filling of the lamp, causing properties such as lamp voltage, spectrum of the emitted light and/or color point, to change. This is particularly severe in lamps with unsaturated fillings, such as unsaturated high-pressure sodium (HPS) lamps. See page 2, lines 3-7 of Applicant's specification.

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There is nothing in Scott which would lead the skilled artisan to limit the amount of MgO to 1000 ppm. On the contrary, Scott clearly teaches that MgO may range up to 1500 ppm, where spinels would form. Thus, while Scott's range is overlapping, and Scott fails to suggest or render obvious Applicant's narrower critical range for MgO.

Regarding the question of anticipation, MPEP 2131.03 states:

In order for a showing of overlapping ranges to establish anticipation, the claimed range must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, ... it may be [concluded] that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims.

Since Scott fails to disclose that the amount of MgO should be kept below 1500 ppm to avoid spinel formation, Applicant's teaching that MgO should be kept below 1000 ppm to avoid spinel formation is clearly unexpected. Thus, Scott's range does not disclose Applicant's range with sufficient specificity to constitute an anticipation.

In response to Applicant's prior argument that Scott teaches that ZrO<sub>2</sub> is optional, whereas Applicant requires that ZrO<sub>2</sub> be present in the range of 50-600 ppm, the Examiner has responded that Scott teaches a preferred composition including at least 100 ppm ZrO<sub>2</sub>, citing col. 4, lines 42-43 of the reference.

However, not only does Scott not require the presence of ZrO<sub>2</sub>, but Scott also provides no reason for the preferred inclusion of ZrO<sub>2</sub>.

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In contrast, Applicant teaches that  $\text{ZrO}_2$  is required to counteract spinel formation. However, the amount of  $\text{ZrO}_2$  is critical, because too much would result in the formation of a zirconium-containing second phase, which would form on the inner surface of the lamp vessel, adversely affecting both light efficiency and the mechanical strength of the lamp vessel. See page 2, lines 7-13 of Applicant's specification.

Since Scott fails to appreciate the critical role of  $\text{ZrO}_2$ , Scott fails to teach Applicant's claimed range with sufficient specificity to constitute anticipation under Section 102, and also fails to suggest the criticality of Applicant's claimed range in a manner to constitute obviousness under Section 103.

In response to Applicant's prior argument that Scott fails to disclose oxides of erbium, holmium and thulium, the Examiner has responded that while this is true, nevertheless Applicant's claims also allow for oxides of dysprosium, which Scott does disclose.

However, the disclosure of only one member of a group is insufficient to anticipate the group, since:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Moreover, the disclosure of only one member of a group, together with the lack of any teaching or suggestion which would lead the skilled artisan to the other members of the group, is insufficient to render the group obvious.

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Since Scott fails to disclose: an upper limit of 1000 ppm for MgO; that ZrO<sub>2</sub> is an essential rather than an optional component; and that the second metal in oxidic form includes Er, Ho and Tl, Scott fails to anticipate Applicant's claims.

Moreover, in specifically teaching: an upper limit of 1500 ppm for MgO; that ZrO<sub>2</sub> is an optional component; and that the second metal in oxidic form is selected from Y<sub>2</sub>O<sub>3</sub>, Sc<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub> and Tb<sub>2</sub>O<sub>3</sub>, Scott fails to suggest Applicant's claimed composition, and in fact leads the skilled artisan away from Applicant's claimed invention.

Accordingly, the rejected claims are neither anticipated by nor rendered obvious over Scott, and the rejections under 35 U.S.C. 102(a), 102(e) and 103(a) should be withdrawn.

Rejection over Tiedt in view of Scott

Claims 1-6 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Tiedt et al. U.S. patent 5,625,256 (herein 'Tiedt') further in view of Scott.

In response to Applicant's prior argument that the teachings of Tiedt and Scott are in conflict regarding both the identities and amounts of the dopants, the Examiner has responded that while the compositional ranges of the references are not identical, nevertheless there is substantial overlap in the ranges, making the references combinable.

However, in order for references to form an effective combination under Section 103, there must be some teaching or suggestion in at least one of the references which would motivate the skilled artisan to combine the teachings in a way to arrive at Applicant's claimed invention.

Scott teaches MgO with an upper limit of 1500 ppm, but provides no reason for this upper limit. In fact, Scott doesn't even explain the function of MgO. He does state at the end of

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the Background section of the specification that there is a need for an alumina arc tube with reduced tendency for sodium diffusion and/or binding, but never states that the claimed composition or any of its components meets this need.

Tiedt teaches an upper limit of 800 ppm for MgO, and states that above this limit, a secondary phase starts to develop which facilitates the diffusion of sodium into the outer bulb. However, Tiedt stresses that ZrO<sub>2</sub> and Y<sub>2</sub>O<sub>3</sub> must be jointly used with MgO, in order to obtain a mutual interaction which imparts characteristics to the ceramic material that clearly exceed the characteristics that might be expected as a result of the mere addition of these doping substances alone. See col. 3, lines 1-6.

In contrast, Scott teaches that ZrO<sub>2</sub> is only an optional component.

Since Tiedt is in conflict with Scott in several respects, including the upper limit of MgO, but most important, the need to use ZrO<sub>2</sub> and Y<sub>2</sub>O<sub>3</sub> in combination with MgO, the references cannot be combined in the manner urged by the Examiner, despite the overlapping ranges disclosed.

In response to Applicant's argument that neither Tiedt nor Scott teach or suggest Applicant's other claimed dopants, Er, Ho and Tl in oxidic form, the Examiner has stated that not every member of a Markush group needs to be found to meet the limitations of the claims.

However, where only one member of a four-member group is found, and there is no teaching or suggestion in the references which would lead the skilled artisan to the other three members of the group, that one member cannot be said to render obvious the choice of the other three members of the group.

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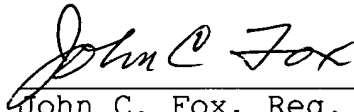
Both Scott and Tiedt are utterly lacking in any teaching or suggestion which would lead to the choice of Er, Ho and Tl in oxidic form. Thus, the references fail to render obvious Applicant's Markush group.

Accordingly, the rejected claims are patentable over the combined teachings of Tiedt and Scott, and the rejection under 35 U.S.C. 103(a) should be withdrawn.

Conclusion

In view of the foregoing, claims 1-6 are patentable over the cited references, and Applicant respectfully requests that the Examiner withdraw the rejections of record, allow all of the pending claims, and find the application to be in condition for allowance.

Respectfully submitted,



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